

Appl. No. 10/599,359
Amendment and Response to Office Action

Attny Docket No. 3741

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/599,359
Inventors	:	Paul C. Burke et al.
Filed	:	May 29, 2007
Title	:	ADJUSTABLE LENGTH CABLING SYSTEMS
TC/A.U.	:	3617
Examiner	:	Le, Mark T.
Attny Docket No.	:	3741

Mail Stop Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION

Dear Sir:

This amendment is a response to the Office Action dated September 8, 2011.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 4 of this paper.

This listing of claims will replace all prior versions and listings of the claims in the application:

Listing of Claims:

We claim:

1. (Currently Amended) A cable routing system for use with a passenger vehicle having a plurality of rows of passenger seats, comprising:

at least a first row of seats and a second row of seats for a plurality of passengers, the first row of seats and the second row of seats having at least an operator selectable first configuration and an operator selectable second configuration, wherein each of the first and second configurations [defines] is defined by a different distance between the first row of seats and the second row of seats;

a multiconductor cable having a length and first and second ends having respective first and second connectors coupled thereto, the multiconductor cable further including coiled and uncoiled portions, wherein the multi-conductor cable extends between at least the first row of seats and the second row of seats; and

a cable storage unit configured to hold the coiled portion of the length of the multi-conductor cable, wherein the cable storage unit has a housing configured to be mounted underneath at least one of the passenger seats, and the multiconductor cable may be manually coiled or manually uncoiled in response to a change from the first configuration to the second configuration such that the uncoiled

portion of the multiconductor cable is at least approximately the distance between the first row of seats and the second row of seats.

2. (Cancelled)

3. (Previously Presented) A cable routing system as defined in claim 1, wherein the cable storage unit comprises a reel configured to be rotated relative to the housing, such that when the reel is rotated, the length of the coiled portion within the cable storage unit changes.

4. (Cancelled)

5. (Previously Presented) A cable routing system as defined in claim 1, wherein the first and second connectors include at least one of a DIN connector or an RCA connector.

6. (Previously Presented) A cable routing system as defined in claim 1, wherein the multiconductor cable comprises at least one Ethernet conductor.

7. (Previously Presented) A cable routing system as defined in claim 1, wherein the vehicle is an aircraft.

REMARKS

Claims 1, 3 and 5-7 are presently pending in the application. Claims 9-24 were added in a previous amendment, but were subjected to a restriction requirement and thus will be pursued in a separate divisional application. The Examiner has rejected claims 1, 3 and 5-7 under 35 U.S.C. §112 ¶1 for failing to comply with the written description requirement because “[t]he claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.” (Office Action at 2, paragraph 2). Specifically, the Examiner asserts that the limitations in the multiconductor cable such that it “‘may be coiled and uncoiled in response to a change from the first configuration to the second configuration’ and ‘the uncoiled portion of the multiconductor cable is at least approximately the distance between the first row of seats and the second row of seats’” are not supported by the originally filed disclosure.

In response, Applicant respectfully submits that the inventors did specifically recognize and disclose an adjustable cable system to solve the problem of clutter created by uncoiled multiconductor cables as an aircraft is reconfigured, i.e., first and second rows adjusting their distances from one another. As the published application (US 2007/0262185A1) notes, the present invention is specifically directed towards enabling the vehicle (e.g., aircraft) operators to change the distance between rows of seats without having to install a new cabling system having a different length of cable:

[0005] In some transports, particularly in commercial aircraft, it is often desirable to change the distance between the rows of seats to configure the aircraft for a different flight routing or purpose. Unfortunately, because the rows of seats are often electrically coupled to each other using fixed length cables, a change (e.g., an increase) in seat row spacing typically requires replacement of the existing fixed length cables with fixed length cables having an appropriate length. Of course, changing seat-to-seat cabling is a time consuming and expensive process. In addition, many aircraft manufacturers and commercial airline companies do not maintain a sufficient or complete stock (or in some cases any stock) of different length cable assemblies. As a result, the relatively long lead times associated with cable assemblies make a relatively quick change in seat spacing impractical.

[0006] The use of fixed length seat-to-seat cabling is further complicated by the fact that spacing between seat rows is typically not consistent for all rows along the length of the aircraft. Specifically, the large numbers and variety of electrical and mechanical sub-systems that are distributed throughout an aircraft often require a particular row of seats to be located slightly closer or slightly further from another row of seats to prevent, for example, mechanical interference between one or more seats and one or more of these sub-systems.

(US 2007/0262185 A1, p.1, ¶¶. 0005-6). The application of the present invention further notes a prior solution to this need, and then contrasts that approach with the teachings of the present invention. That is, prior approaches simply looped or placed extra cabling under a seat so that “rows of seats [can] be moved apart without having to replace the cable assemblies[,]” which created safety and/or electrical hazards, while the present adjustable length cable system uses a spool or reel for manually coiling and uncoiling the multiconductor cable as the seat rows are being reconfigured:

[0016] FIG. 2 depicts a known manner in which fixed length cable assemblies are used to provide power, data and other signals to aircraft seats and to electrically couple one row of seats to another. As shown in FIG. 2, cables having extra length are used to enable the rows of seats to be moved apart without having to replace the cable assemblies. However, as depicted in FIG. 2, the extra length of cabling is loosely placed underneath the seat and, as a result, presents a potential hazard and/or failure if the excess cabling is dislodged and falls onto the floor underneath the seat.

[0017] FIG. 3 depicts an example adjustable length cable system. The example system depicted in FIG. 3 includes a cable storage unit 300 and a cable assembly 302 having connectors or terminations 304, 306, 308 and 310. The cable storage unit 300 includes a spool or reel 312 upon which a

portion of the length of the cable assembly 302 is wound. The cable storage unit 300 also includes a base or housing 314. The housing 314 includes a plurality of circumferentially spaced tabs 316 configured to enable the reel 312 to be rotatable relative to the housing 314. Additionally, the tabs

(US2007/0262185A1 at ¶¶16-17). The application further goes on to explain how this disclosure “facilitates changes in the distances between rows of seats” such that “changes in distances between seats can be carried out without having to engage in the costly process of designing, obtaining and installing different fixed length cables:

[0020] FIG. 5 depicts an example manner in which the adjustable length cable systems of FIGS. 3 and 4 may be used to couple signals between aircraft seats. As shown in the example implementation of FIG. 5, the adjustable length cable systems described herein may be used to eliminate loose lengths of cable (e.g., as depicted in FIG. 2) that facilitate changes in the distances between rows of seats (e.g., in aircraft). As can be seen in the example of FIG. 5, in contrast to known fixed length cable assemblies, the adjustable length cabling systems described herein enable a single type of cabling system to be used to electrically couple power, data and other signals to multiple rows of seats within, for example, aircraft and/or other transports. Further, with the example adjustable length cabling systems described herein, changes in distances between seats can be carried out without having to engage in the costly process of designing, obtaining and installing different fixed length cables.

(US2007/0262185A1 at ¶20). The specification literally discloses: a) “a single cabling system to be used to electrically couple . . . to multiple rows of seats[,]” i.e. a first and second row of seats. The coupling of the cabling system must extend from at least from the first row to the second row — indeed, the specification literally discloses an adjustable cabling system through which “changes in distances between seats can be carried out” without replacing the cabling system with “different fixed length cables.” In other words, this disclosure plainly supports a single cabling system which enables adjusting two rows of seats to different distances between one another, i.e., a “first and second configuration.” And, as shown above, the specifications embodiments include a reel for winding or unwinding, i.e., coiling or uncoiling the cabling to adjust for the change in distance between the rows such that the coupling between the rows is still enabled. Thus, the Applicant respectfully submits that the inventors did have these limitations in their possession as of the filing

date of their application, and that such limitations are supported by the disclosure as filed, as shown by example above. Thus, Applicant respectfully requests reconsideration of this rejection.

Next, the Examiner has rejected claims 1, 3 and 5-7 based upon a new combination of Lee (US 2007/0262185 A1) in view of Martin (US 4,856,738) and further in view of Smith (US 4,713,197) to assert that the present invention as claimed would have been obvious to a person of skill in the art. (Office Action at p. 2, ¶3). The Examiner further criticized the Applicant's response to the earlier rejection based upon Lee and Martin on the grounds that "the arguments appear to address Lee and Martin individually, instead of in combination as set forth[.]" (Office Action at p. 2, ¶3).

Respectfully, Applicant does not disagree with the well-established principles set forth by *In re Keller* and its progeny, which the MPEP cites at Section 707.07(f) for the proposition that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." (MPEP Section 707.07(f), Paragraph 7.37.13, referencing *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) and *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). However, the facts of *In re Keller* are distinguishable from the prior art (and the shortcomings of the prior art) as analyzed in the present case.

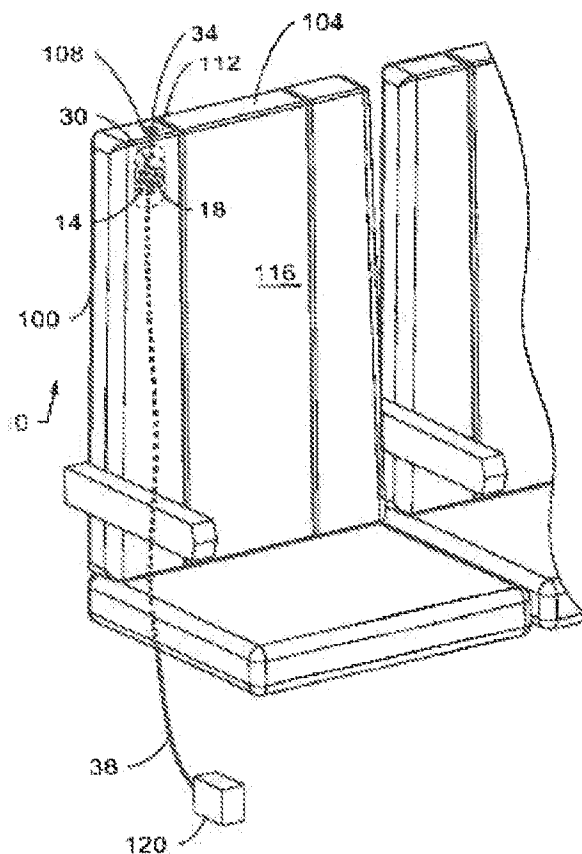
The Appellant of *In re Keller* requested reissue of U.S. Patent 3,557,796 because of newly discovered prior art previously not examined during the initial prosecution. The Examiner rejected claims under 35 U.S.C. § 251 because of an insufficient reissue declaration, and also rejected claims as obvious under 35 U.S.C. § 103. In making the obviousness rejection, the Examiner relied upon the

teachings of two primary references, each one combined with a secondary reference. In response, the Appellant submitted evidence of non-obviousness to rebut the prima facie case of obviousness established by the Examiner that consisted only of a single affidavit that was only in regard to the secondary reference. (*In re Keller*, 642 F.2d at 422-23). The CCPA affirmed the Board's decision that, under the facts of the case, one cannot show objective evidence of non-obviousness by "attacking references individually" when the rejection is based upon a combination. (*Id.* at 425-426). In other words, the rebuttal evidence that consisted only of a single affidavit that only attacked the single secondary reference was insufficient evidence of non-obviousness to overcome the rejection. Nothing in *Keller*, however, precludes addressing each of the references in series to show how such references – either alone or in combination – fail to teach each and every element of the claims.

In the present case, none of the references of Lee, Martin, or Smith – individually or in combination -- teaches or suggests the claimed invention. As to Lee, even if one of skill could adapt Lee to house a multiconductor cable as claimed, that modified version of Lee still would not teach a cable storage unit as taught and claimed by the present invention. Lee involves a principle of operation whereby the cord reel assembly is placed in the headrest for a user retractable interface for connecting to the laptop, and a fixed length cable extends through the seat to the network:

An apparatus for connecting a laptop computer to a communications network for access by a seated user in a mobile platform. A cord reel assembly within the seat headrest includes a user interface retractable through the headrest and a user connector for connecting the laptop thereto. A connector to the network is situated below the seat. A seat interface extends from the cord reel assembly through the seat to the network connector. The apparatus provides an ethernet connection between the laptop and the network. The

(Lee, Abstract). In addition, the intended purpose of Lee is not only to provide a user access, but to allow the user to access and retract the laptop cord connector into the headrest when not in use:



(Lee, coverage). Lee teaches to be used with a network connector such as the cable assembly of the present invention, not to replace such a network cable assembly. Lee further teaches away from the present invention, with the present invention teaching and claiming an operator adjusted cable system where the operator (not the user) adjusts the cable system to a set length to accommodate the particular length between rows of seat for the vehicle. Nothing is user adjustable, and nothing is an automatically retractable cord as in Lee.

Lee also fails to teach a mechanism whereby an aircraft operator could manually coil and uncoil a multiconductor cable, e.g., through winding or manual pushing of the cable into or from the storage unit. As the specification of the published application teaches, the present invention is focused upon using a reel or similar mechanism for an operator to manually coil or uncoil the multiconductor cable:

[0018] In operation, the effective length of the adjustable cabling system shown in FIG. 3 may be changed by rotating the reel 312 relative to the housing 314. In the example of FIG. 3, rotating the reel 312 clockwise reduces the effective (e.g., overall) length of the cabling system and rotating the reel 312 counter-clockwise increases the effective length of the cabling system.

[0019] FIG. 4 depicts another example adjustable length cable system. Similar to the example adjustable cabling system depicted in FIG. 3, the example adjustable cabling system of FIG. 4 includes a cable storage unit 400 and a cable assembly 402 having connectors or terminations 404, 406, 408 and 410. In contrast to the example system of FIG. 3, the cable storage unit 400 depicted in FIG. 4 does not include a reel or spool to enable rotatable retraction and/or extension of a length of the cable assembly. Instead, the storage unit 400 provides an internal chamber into which additional length of the cable assembly 402 may be disposed (e.g., by manually pushing a length of the cable assembly 402 into the chamber) and/or extracted (e.g., again by manually pulling a length of the cable assembly 402 from the chamber).

(US2007/0262185A1 at ¶¶18-19). By contrast, Lee teaches a mechanism (like typical modern aircraft telephone handset cords) which automatically retracts into a reel assembly once the user has ceased use of the electronic device:

Martin does no better – it, like Lee, makes no teaching of how to coil or connect a multiconductor cable as claimed. Even worse, Martin makes no mention of any need to connect cabling between rows of seats, much less suggesting how such connection would be made. In that regard, Applicant notes that the Examiner's reliance upon Martin does not suggest that that reference teaches cabling connections of any kind.

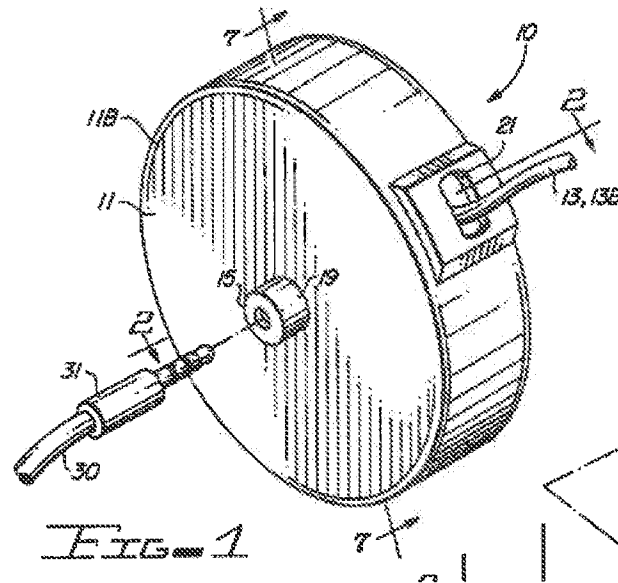
Smith, like Lee and Martin, provides no teaching for a multi-row system using a single cable to adjustable connect electrical signals from a first row of seats to a second row of seats. Indeed, Smith actually teaches away from a coiling solution as expressly taught and claimed by the present invention:

In a device described by the inventor in a copending application, Ser. No. 266,726, filed May 26, 1981, now U.S. Pat. No. 4,384,688 and entitled, Self-Storing Cord and Hose Reel Assembly, a coiled portion of the signal cord serves as a continuous coupling between the rotating reel and the fixed end of the cord. The coiled portion of the cord, in this case, simply twists or coils and uncoils as the reel turns.

None of the cord or hose storage reels, as described above, is totally satisfactory for use with low-level signals and shielded cables. Those employing ordinary commutating slip rings produce electrical noise that interferes with their use in handling signal cables, such

as telephone cords. The commutating types are also difficult to shield, especially the commutating elements themselves. Where electrical connections are made through the retracting springs, the problem of insulating between the nested springs adds to the cost of such an approach. The coiled cord approach cannot readily be applied in the case of a shielded cable, because the shield does not generally lend itself to being formed and flexed in such a manner.

(Smith at 1:56-2:9). In other words, Smith teaches away from coiling and uncoiling a multiconductor cable as claimed in the present invention. By contrast, Smith teaches a different solution of plugging a cable to a second cord through a hollow opening of a housing terminating in a phone jack:



(Smith Fig. 1). In sum, Smith does not disclose, and indeed teaches away from a single multiconductor cable which coils and uncoils to accommodate the change in length between rows of seats, as required by the claims of the present case.

As discussed in MPEP § 2143.01, “[i]f a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification,” and “[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.” *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).”

In other words, even if Martin could be relied upon for suggesting providing connections between rows of seats (which it does not), the combination of those references would be improper in

light of *In re Ratti* because it would change the principle of operation of Lee (i.e., a retractable cord) and make it unsuitable for its intended purpose (individual user adjust of cables at the headrest). Likewise, even if Smith could be relied upon for use in suggesting providing connections between rows of seats (which it does not), the combination of those references would be improper in light of *In re Ratti* because it would change the principle of operation of Smith (avoiding coiling multiconductor cables). Thus, this combination of references – whether considered alone or in combination -- fails to result in a conclusion of obviousness for the present claims. Accordingly, Applicant respectfully requests the Examiner's withdrawal of the rejections based on Lee, Martin and Smith.

CONCLUSION

In view of the foregoing amendments and remarks, the Applicants respectfully request reconsideration and allowance of the pending claims, nos. 1, 3, and 5-7. The Commissioner is hereby authorized to charge any fees with respect to this communication to Deposit Account No. 14-1131.

Also being submitted is a Power of Attorney, which was previously filed on March 23, 2010, reflecting the change of correspondence address to Customer Number 98580.

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Respectfully submitted,

Dated: February 8, 2012

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